National Aeronautics and
Space Administration

Goddard Space Flight Center
Greenbelt, Maryland
20771

Laboratory Chief's Summary

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Dear Reader:

Thank you for taking the time to acquaint yourself with the Laboratory for Atmospheres and our accomplishments for 2000!

The Laboratory consists of 375 scientists, technologists, and administrative personnel working within the Earth Sciences Directorate of NASA's Goddard Space Flight Center. Together, we are dedicated to our mission of advancing the knowledge and understanding of Earth's atmosphere and the atmospheres of other planets. In doing so, we contribute directly to two of NASA's primary activities, the Earth Science and Space Science Enterprises.

We publish this report each year for a diverse group of readers—from our managers and colleagues within NASA to scientists outside the agency, from graduate students in the atmospheric sciences to members of the general public. Inside, you'll find descriptions of our philosophy, our people and facilities, our place in NASA's mission, and our accomplishments for 2000.

We had a busy year. Laboratory staff hosted 75 seminars, conducted 18 workshops and science team meetings, published 202 refereed papers, hosted 155 short-term visiting scientists, and participated in an array of educational activities. Our scientists played leading roles in mission and science activities. We had nine project scientists and four deputy project scientists for spacecraft missions, one EOS validation scientist, and seven co-project or mission scientists in field campaigns. I want to thank Yoram Kaufman for having served as project scientist on EOS Terra. I also want to thank Chris Kummerow for having served as project scientist on TRMM, and Paul Newman and Mark Schoeberl for serving as both mission planners and project scientists on SOLVE.

Among our many workshops and seminars, I am pleased to mention the Workshop on Relationships and Intercomparison of Monsoon Climate Systems held Nov 28-30 at GSFC. The workshop was hosted by the Laboratory's William Lau (Code 913) and Professor Tetsuzo Yasunari of Tsukuba University in Japan. The workshop provided a forum for scientific exchange and recommended collaborative research projects between US and Japanese researchers through the United States Global Change Research Program (USGCRP), the Japanese Frontier Research System for Global Change (FRSGC), the Global Energy and Water Cycle Experiment (GEWEX), and the Climate Variability and Predictability Programme (CLIVAR). This collaboration is important for increasing our understanding of teleconnection, the climatic connection of global weather systems.

The Laboratory has been active in developing new and improved instruments for spaceflight and for field campaigns. We completed four new instruments this year under the Instrument Incubator Program (IIP). We deployed two improved instruments on the SAFARI campaign, the Cloud Physics Lidar (CPL) and the Surface Measurements for Atmospheric Radiative Transfer (SMART). The CPL, which can measure optical depth, particle size and depolarization is supporting validation of EOS Terra. We also made significant progress on the Neutral Gas and Ion Mass Spectrometer (NGIMS) for the CONTOUR Mission.

The Laboratory had an exciting year participating in international field campaigns. The SOLVE/THESEO-2000 completed its mission in March. SOLVE is a mission sponsored by NASA's Upper Atmosphere Research Program with the participation of national and international organizations. Direct observations from NASA's ER-2 and DC-8 aircraft confirmed that polar stratospheric clouds (PSCs) are key components of the ozone loss process. Our Laboratory played a unique role in this mission, helping to develop mission strategy, providing project scientists, developing and flying some of the experiments, and contributing theoretical studies. SAFARI was a multinational, multi-aircraft campaign in southern Africa. Laboratory members provided *in situ* and remote measurements, data analysis, and theoretical analyses. SAFARI was one of the most aggressive and successful campaigns of its kind ever undertaken. The experiment employed coupled ground-based, *in situ*, and remote-sensing observations to study linkages of land-atmosphere processes and the effects of biomass burning in southern Africa.

In 2000, many Laboratory members earned awards for their outstanding work. Joanne Simpson was nominated for the Charles E. Anderson Award "for her outstanding efforts in promoting diversity within the Society (AMS) and the greater scientific community." Mark Schoeberl won the NASA Distinguished Service Medal for his leadership role in formulating the Earth Science Vision for the Earth Science Enterprise. Yoram Kaufman won the NASA Medal for Outstanding Scientific Achievement and the GSFC Nordberg Award.

The year 2000 was also a time to bid farewell to a number of valuable members of the Laboratory. Chris Kummerow, TRMM project scientist, left to become an associate professor at Colorado State University. We will miss him for all his work on TRMM, but we count on continuing collaboration with him. Robert Theis was my assistant for many years and helped me in many tasks, including this report and moving the Laboratory into our new building. Arlin Krueger, who accepted a professorship at UMBC, had made significant improvements in the TOMS instrument and was principal investigator of ADEOS/TOMS. Patty (Golden) Balanga, one of our Division secretaries and a computer whiz, carried a large share of the burden in producing recent annual reports. Patty is moving on to a new life and a new job across the Potomac. Finally, it is with great regret that we lose Tony Busalacchi to the University of Maryland. As the Chief of the Laboratory for Hydrospheric Processes, Tony helped in creating a positive atmosphere between his Laboratory and mine. Personally, I will miss having him here, although I look forward to close collaboration with him as the head of ESSIC at the University of Maryland.

I am pleased to greet the new members of the Laboratory. In particular, I want to welcome Ron Gelaro and Eric Smith. Ron Gelaro will be working with Bob Atlas in the Data Assimilation Office. Eric Smith is the new Project Scientist for GPM. These newcomers will both add much to the productivity of our Laboratory.

This will be my last report as Chief of the Laboratory for Atmospheres. As of December 31, 2000, I have been the director of the Earth Sciences Directorate for Goddard Space Flight Center. My ten years with the Laboratory have been profoundly rewarding; the caliber of the scientists in each of the branches has made it a pleasure to be at the helm during this decade. I look forward to witnessing the Laboratory's continued success.

Sincerely,

Franco Einaudi, Acting Chief, Laboratory for Atmospheres, Code 910
Director, Earth Sciences Directorate, Code 900
Phone: 301-614-6786
Fax: 301-614-6301
E-mail: franco.einaudi@gsfc.nasa.gov